



SAT 8

Compact Mid-Field

active studio monitor



SAT 8

USER MANUAL • CONTENTS

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USER MANUAL • SAFETY INSTRUCTIONS



WARNING: To reduce the risk of fire or electrical shock, do not expose this equipment to rain or moisture. Do not remove cover. No user serviceable parts inside. Refer servicing to qualified personnel.

1. READ INSTRUCTIONS - Read all safety and operating instructions before operating this product.
2. RETAIN INSTRUCTIONS - Retain these safety and operating instructions for future reference.
3. HEED WARNINGS - Follow all warnings on this product and in the operating instructions.
4. FOLLOW INSTRUCTIONS - Follow all operating and use instructions.
5. ATTACHMENTS - Do not use attachments not recommended by the product manufacturer as they may cause hazards.
6. WATER AND MOISTURE - Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.
7. ACCESSORIES - Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with accessories recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer.
8. POWER SOURCE - This product should be operated only from the type of power source indicated on the marking label on the back of the product. It is **IMPORTANT** to confirm that the voltage selector switch on the back of the SAT 8 is set to the proper voltage setting. If you are unsure of the type of power that is supplied to your home, consult your product dealer or local power company.
9. LIGHTNING- For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.
10. OVERLOADING - Do not overload wall outlets or extension cords as this can result in a risk of fire or electric shock.
11. LIQUID ENTRY - Never spill any liquid of any kind on the product.
12. SERVICING - Do not attempt to service this product yourself. Opening or removing covers, including any over bottom or side speaker drivers, may expose you to dangerous voltage or other hazards. Refer all service to qualified service personnel.
13. DAMAGE REQUIRING SERVICE - Unplug this product from the wall outlet and refer servicing to qualified personnel under the following conditions:
 - a. When the power-supply cord or plug is damaged.
 - b. If liquid has been spilled, or objects have fallen into this product.
 - c. If the product does not operate normally by following the operating instructions. Adjust only controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
 - d. If the product has been dropped or damaged in any way.
 - e. When the product exhibits a distinct change in performance - this indicates a need for service.
14. REPLACEMENT PARTS - When replacement parts are required be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in risk of fire, electric shock, or other hazard.
15. SAFETY CHECK - Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
16. HEAT - This product should be situated away from heat sources such as radiators, heat registers, stoves, or other products that produce heat.
17. MOUNTING: Unsafe mounting or overhead suspension of any heavy load can result in serious injury and equipment damage. Mounting a speaker should be done by qualified persons in accordance with all applicable local safety and construction standards. Be certain to follow the instructions provided by the manufacture the mounting bracket, be certain that is capable supporting the weight of the speakers to be mounted.

SAT 8

USER MANUAL • 1 - 3 • INTRODUCTION & IMPORTANT NOTES

1. SAT 8 Introduction

World-renowned for their accurate, full-range sound, Blue Sky studio monitoring systems are used in critical listening applications by audio professionals in a wide variety of industry sectors. Emmy Award-winning sound editor Eric Lalicata, Grammy Award-winning engineer/remixer Roger Sanchez and legendary Talking Heads keyboard/guitarist Jerry Harrison all rely on Blue Sky speakers to check the accuracy of their work before it goes public. And it's the same story at film sound facility Skywalker Sound and broadcaster ESPN, where Blue Sky speakers once again provide an important link in the production chain.

Blue Sky's fresh approach to studio monitor design delivers the highest possible ratio of performance to cost, in turn providing the highest value to our customers.

Making the subwoofer (SUB) an integral part of the monitor system design enables the SAT 8 studio monitor to be positioned for the best imaging, and the SUB to be positioned for the best bass response. Relieving the SAT 8 studio monitor of the requirement to reproduce the low frequencies means that the uncompromised sealed-box design, can combine with sophisticated bass management electronics, to provide a seamless transition between the SAT 8 and SUB.

It all adds up to accurate, full range sound.

To that end we are proud to introduce the SAT 8. Blue Sky's SAT 8 is a three way, tri-amplified, 300-Watt, compact mid-field monitor which features an 8" high excursion hemispherical woofer, an ultra low distortion 4" hemispherical midrange driver, and a 1" dual ring radiator tweeter with integral waveguide, for superior off-axis response. To reduce destructive cabinet diffraction reflections, Blue Sky has developed and incorporated into the baffle, the proprietary "Multi-Aperture Acoustic Diffraction Absorber", which helps to maintain smooth on and off axis frequency response throughout the critical MF and HF frequency range, without the need for a large wave guide or horn.

The SAT 8 is powered by a dedicated low distortion 100-Watt amplifier for the 8" woofer, a low distortion 100-Watt amplifier for the midrange, and a low distortion 100-Watt amplifier for the tweeter. The SAT 8 effortlessly delivers clean and accurate sound with a frequency response of 80Hz to 30kHz +/-3.0dB (200Hz to 15kHz +/-1.5dB).

For full compatibility with Blue Sky's SUB 15 Universal, SUB 212, SUB 12 and BMC (Bass Management Controller). The rear panel also has controls for "full space" (placement in a room) or "half space" (mounted in a baffle wall) operation, along with individual HF, MF and LF level trims, as well as controls for variable gain settings. The SAT 8 is designed to operate both vertically or horizontally, thanks to the rotatable MF/HF plate.

The SAT 8 has been designed to integrate perfectly with Blue Sky's new SUB 212. The SUB 212 is a sealed box, push-pull, 400-Watt subwoofer. The push-pull configuration reduces distortion, provides increased output, and features an anechoic frequency response of 25Hz to 200Hz, +/-3dB. In addition, the SUB 212 also has built-in 2.1 bass management electronics with both a 4th order 80Hz Linkwitz-Riley low-pass filter and a 2nd order 80Hz high-pass filter that is perfectly matched to the response of the SAT 8 (the SUB 212 is also compatible with the SAT 8, SAT 6.5 and SAT 5).

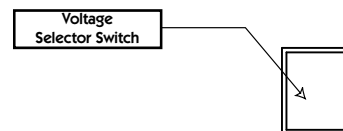
When combined, the SAT 8 and SUB 212 provide a stunningly accurate and engaging, full-range monitoring system. We know you will agree...

Thank you for choosing Blue Sky!

2. Important notes about the SAT 8 and this manual.

Voltage Selector Switch:

Prior to powering this unit, please confirm that the voltage selector switch, located on the back of the SAT 8, has been set to the correct voltage setting. If you are unsure of the type of power that is supplied to your home, consult your product dealer or local power company.



**SET VOLTAGE
BEFORE
APPLYING
POWER**

Subwoofer Requirements:

For proper operation, the SAT 8 requires the use of subwoofer. Because of the prodigious output capabilities of SAT 8, as compared to the SAT 6.5 for example, a SAT 8 monitoring system requires a minimum of one SUB 212 for 2.1 operation and one or two are recommended for 5.1 operation. Please note, that these recommendations are not set in stone and will be dependent on room size, room acoustics and will also be influenced by the specific application / output requirements of the user.

This Owner's Manual:

This manual addresses SAT 8 stereo / 2.1 applications. For information about 5.1 (or beyond) setup, please consult the manual that comes with the BMC MK II or visit the Blue Sky web site (address listed below).

Please read this owner's manual carefully and contact Blue Sky International if you have any comments or questions. Contact information can be found on page 16 or you can visit: www.abluesky.com

3. The SAT 8, what is included?

Each SAT 8 includes the items listed below. Please carefully unpack each item and inspect the components for damage. If any part of the system has been damaged, please contact the dealer that supplied the product or Blue Sky directly.

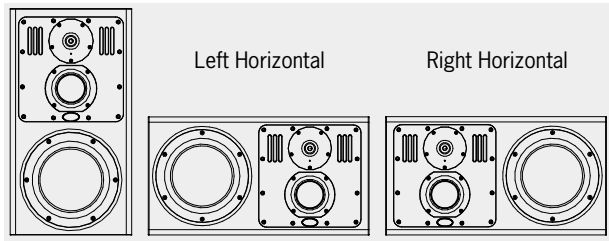
SAT 8 Inventory:

1	SAT 8
1	Power Cable
1	Owner's Manual
1	Warranty Card

SAT 8

USER MANUAL • SAT 8 FEATURES OVERVIEW

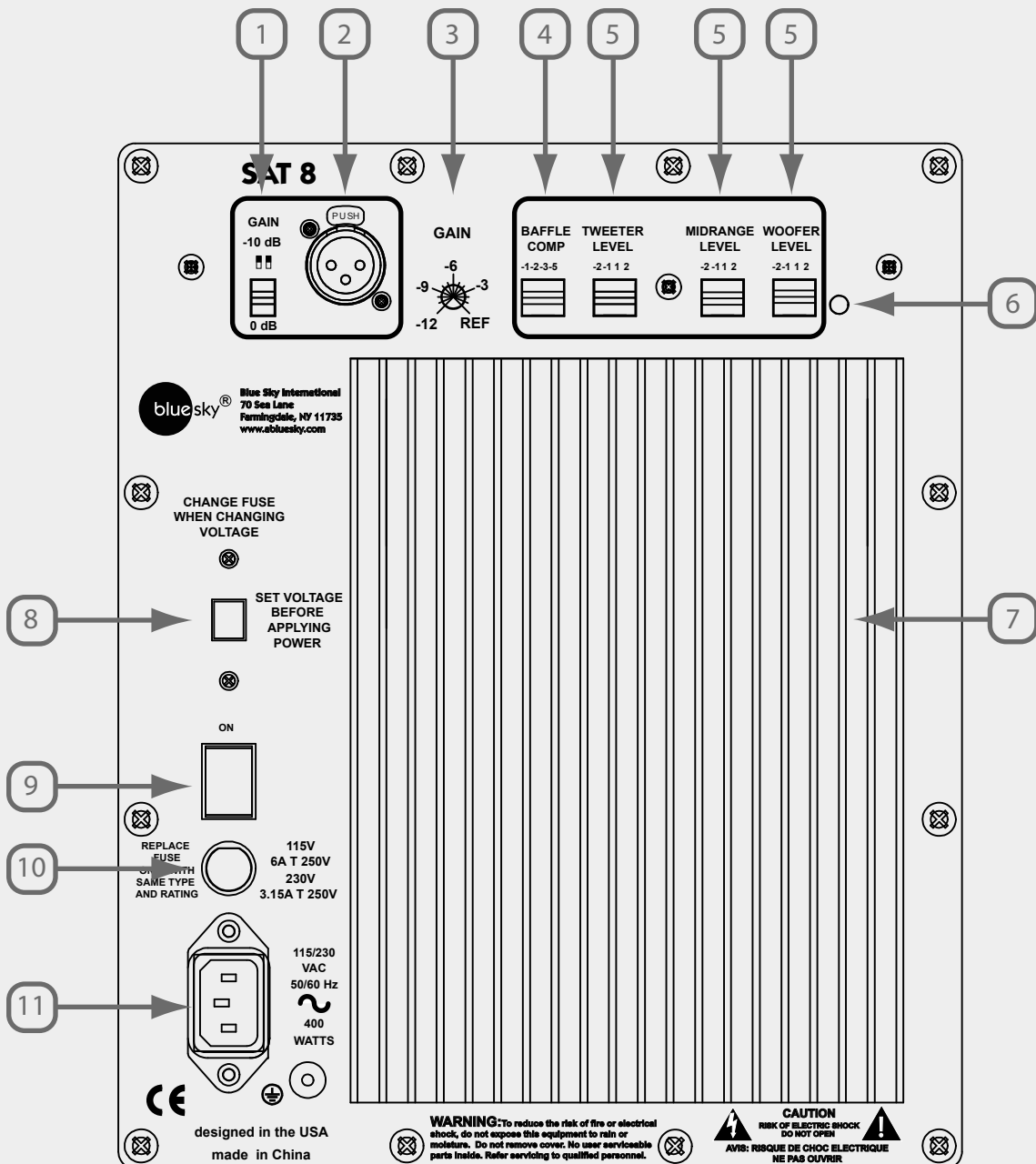
1. Multi-Aperture Acoustic Diffraction Absorber - To reduce destructive cabinet diffraction reflections, Blue Sky has developed and incorporated into the baffle, the proprietary “Multi-Aperture Acoustic Diffraction Absorber”, which helps to maintain smooth on and off axis frequency response throughout the critical MF and HF frequency range, without the need for a large wave guide or horn.
2. Rotatable MF/HF plate - The mid frequency and high frequency mounting plate can be rotated, so that the SAT 8 can operate in both vertical and horizontal modes. To rotate the plate, the twelve 4 mm hex head mounting screws around the plate need to be removed. Please support the plate with your hand while you do this. Once the screws are removed, the plate can easily be removed by tilting the cabinet forward. After this has been done, you can rotate the plate into the vertical or horizontal position. Please ensure that the wires leading to the MF and HF drivers are not being pinched, or interfered with in anyway, then re-install the plate, making sure to properly install and tighten all of the screws. Below are three illustrations showing vertical, left horizontal and right horizontal configurations.



3. 1/4 x 20 Mounting Inserts (located on the back and bottom of the SAT 8) - Inserts / hole patterns, compatible with OmniMount® Type 60 brackets are located on the back and on the bottom of the SAT 8. These brackets are designed to support up to 60 pounds of weight when properly installed. Please visit www.omnimount.com for more information, including detailed mounting instructions. Please see page 13 [Technical Specifications & Dimensions] for more information on insert locations. Also see page 3 [Safety Instructions] item 17 “MOUNTING”.
5. Baffle Compensation - The SAT 8 includes four primary baffle compensation settings, each of which reduces the MF to LF “bump” that typically results from mounting a speaker in a baffle wall. The amount of compensation needed is dependent on room acoustics, along with the size and type of baffle wall. The only way to accurately determine the amount of compensation needed is to use a high resolution acoustic analyzer, such as MLSSA, TEF, etc. For more information please see page 6 & 7 [A Tour of the SAT 8 Amplifier & Electronics] and page 14 [Measurement Data].
6. Individual Driver Level Controls - The SAT 8 includes +/- 3dB of individual driver level adjustments, in 1dB increments. The switches are additive, so in order to increase the level of a driver by 3dB set both the 2 and 1dB switches to the UP position. We highly recommend that you only change these settings, from the “flat” position, as a last resort and only after doing proper acoustics treatment of the room and ensuring proper placement of the SAT 8. For more information please see page 6 & 7 [A Tour of the SAT 8 Amplifier & Electronics] and page 14 [Measurement Data].
7. Input gain and level controls - The SAT 8 includes both a continuously variable input gain control and individual 10dB input pads. This allows the user to adjust the gain from REF (200mv of 500 to 2kHz pink noise = 90dB SPL @ 1M) to -22dB. For more information please see page 6 & 7 [A Tour of the SAT 8 Amplifier & Electronics].

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USER MANUAL • 5 • A TOUR OF THE SAT 8 AMPLIFIER & ELECTRONICS



SAT 8

USER MANUAL • 5 • A TOUR OF THE SAT 8 AMPLIFIER & ELECTRONICS

1. XLR INPUT 0dB / -10dB Dip-Switches - These dip-switches control the 10dB input “pad” on the 80Hz Input. With both dip-switches in the UP position, the -10dB pad is in circuit. With both switches in the down position, it is out of circuit. Max input in the 0dB position is +14 dBu, in the -10dB position it is +24 dBu. Refer to page 5 for more information [SAT 8 Feature Overview].
2. XLR INPUT - This XLR input should be connected to a bass-managed output with a 12 per octave 80Hz high-pass filter, such as the bass-managed outputs on the SUB 15 Universal, SUB 212, SUB 12, or BMC. This input is electronically balanced. Do not connect more than one source to this input. Refer to page 5 [SAT 8 Feature Overview] and page 9 [System Signal Flow & Connections] for more information.
3. GAIN - This trim pot is a continuously variable gain control, with a range of -12 to REF (200mV of 500 to 2kHz pink noise = 90dB SPL @ 1M). In combination with the -10dB input pad, this allows for a range of -22dB to REF. Please refer to page 5 for more information [SAT 8 Feature Overview].
4. Baffle Compensation Dip Switches - The SAT 8 includes four primary baffle compensation settings, each of which reduces the MF to LF “bump” that typically results from mounting a speaker in a baffle wall. To select a specific setting, put the individual dip switch into the “UP” position. For additional flexibility, baffle compensation switches can be used in combination.

The amount of compensation needed is dependent on room acoustics, along with the size and type of baffle wall. The only way to accurately determine the amount of compensation needed is to use a high resolution acoustic analyzer, such as MLSSA, TEF, etc. For more information see page 5 [SAT 8 Feature Overview] and page 14 [Measurement Data].
5. Individual Driver Level Controls - The SAT 8 includes +/- 3dB of individual driver level adjustments, in 1dB increments. The switches are additive, so in order to increase the level of a driver by 3dB set both the 2 and 1dB switches to the UP position. We highly recommend that you only change these settings, from the “flat” position, as a last resort and only after doing proper acoustics treatment of the room and ensuring proper placement of the SAT 8. For more information please see page 5 [SAT 8 Feature Overview] and page 14 [Measurement Data].
6. Rear Power LED - This power LED indicates the SAT 8 is powered ON.
7. Amplifier Heatsink - The heatsink provides essential cooling to the amplifiers inside the SAT 8. This heatsink is oversized and designed to be effective in both vertical and horizontal orientation, as long as proper air circulation is provided. Please ensure that proper air circulation is available for cooling. This is especially important when baffle mounting the SAT 8.
8. Voltage Selector Switch - This switch can be set to either 115 Volts or 230 volts. Prior to powering this unit, please confirm that the Voltage selector switch has been set to the correct voltage setting. If you are unsure of the type of power that is supplied to your studio, consult your product dealer or local power company. If your changing the Voltage, please also confirm the proper fuse is installed [see number 10].
9. Power Switch - Controls the power to all the three amplifiers and all internal electronics.
10. FUSE - Replace with same rating and type for your local voltage rating. For 115V applications use a 6 Amp T 250V and for 230 Volt applications use a 5 x 20mm, 3.16 Amp, T 250V fuse (“T” = Time Delay or SloBlo type fuse).
11. IEC RECEPTACLE - Check voltage selector switch before connecting power. Connect to 115 Volt AC / 60Hz power source, rated for 400 WATTS or 230 Volt / 50Hz rated for 400 WATTS.

SAT 8

USER MANUAL • 6 • MOUNTING & PLACEMENT

Monitor mounting and placement is often an afterthought, but in order to get the best imaging and overall performance from the SAT 8, it is important to place the speakers correctly.

Monitoring Height:

Figure 1 shows the ideal monitoring height, with the SAT 8 located perfectly at seated ear height. If this is not possible, tilting the cabinet at the listening area can improve high-frequency coverage.

Monitoring Angle:

The recommended position for the monitors is based on an ITU standard and sets the speakers at 60 degrees from the listener, forming an equilateral triangle (a triangle with equal sides) - See Figure 2. Fortunately, this setup eliminates most of the math and is easily simplified to the following guidelines: If you want to sit 2 meters from the speakers, place the speakers 2 meters apart. If you want to sit 9 ft. from the speakers, place the speakers 9 ft. apart Etc.

Wall Mount Options:

The SAT 8 is compatible with OmiMount® 60 Series brackets, via the 1/4 X 20 inserts located in the bottom and the back of the cabinet. The OmniMount® 60 brackets are designed to support up to 60 pounds of weight when properly installed. Please visit www.omnimount.com for more information, including detailed mounting instructions. Please see page 13 [Technical Specifications & Dimensions] for more information on insert locations. Also see page 3 [Safety Instructions] item 17 "MOUNTING".

Mounting the SAT 8 in a baffle wall / soffit:

IMPORTANT: It is highly recommended that you check all of your local electrical and safety codes, to make sure that all regulations are going to be met before mounting the SAT 8 in a baffle wall.

Requirements and recommendations:

- 1) Important Requirement: Proper cooling and airflow shall be provided to the back of the SAT 8 / Heatsink.
- 2) Recommendation: In order to build an effective baffle wall, it is best to use a design with considerable mass, that doesn't produce sympathetic resonances. Using three layers of 5/8" (50 mm) Gypsum, with overlapped joints, and the appropriate wood framing has been found to be effective (again, consult local building codes and an engineer or architect for specific design guidelines).
- 3) Recommendation: To avoid sympathetic vibrations, it is best to physically decouple the SAT 8 from the baffle wall structure. An effective way to do this is to use Mason Super W neoprene or natural rubber pads (durometer 40). One Super W pad should be placed under each corner of the speaker.
- 4) Recommendation: Mount the SAT 8 flush with the front of the baffle wall and seal all gaps around the SAT 8 and the baffle wall using a rubber, foam or neoprene gasket material. This will improve the HF frequency response, by reducing any cabinet or edge diffraction related problems (again, check local building codes).

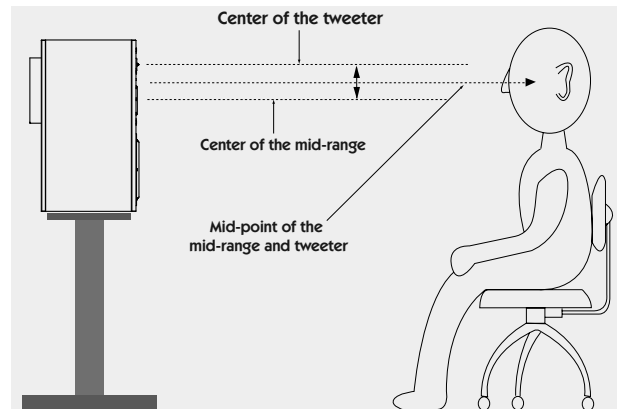
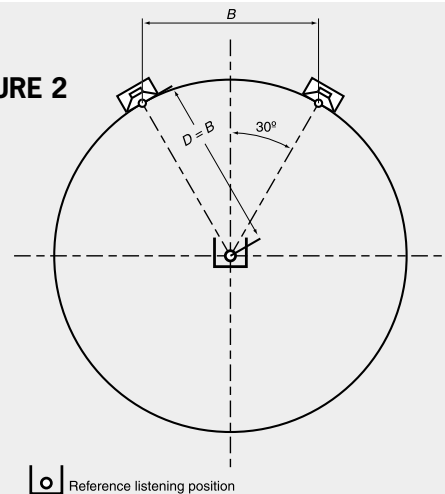


FIGURE 1

MONITORING HEIGHT
RECOMMENDATIONS

FIGURE 2



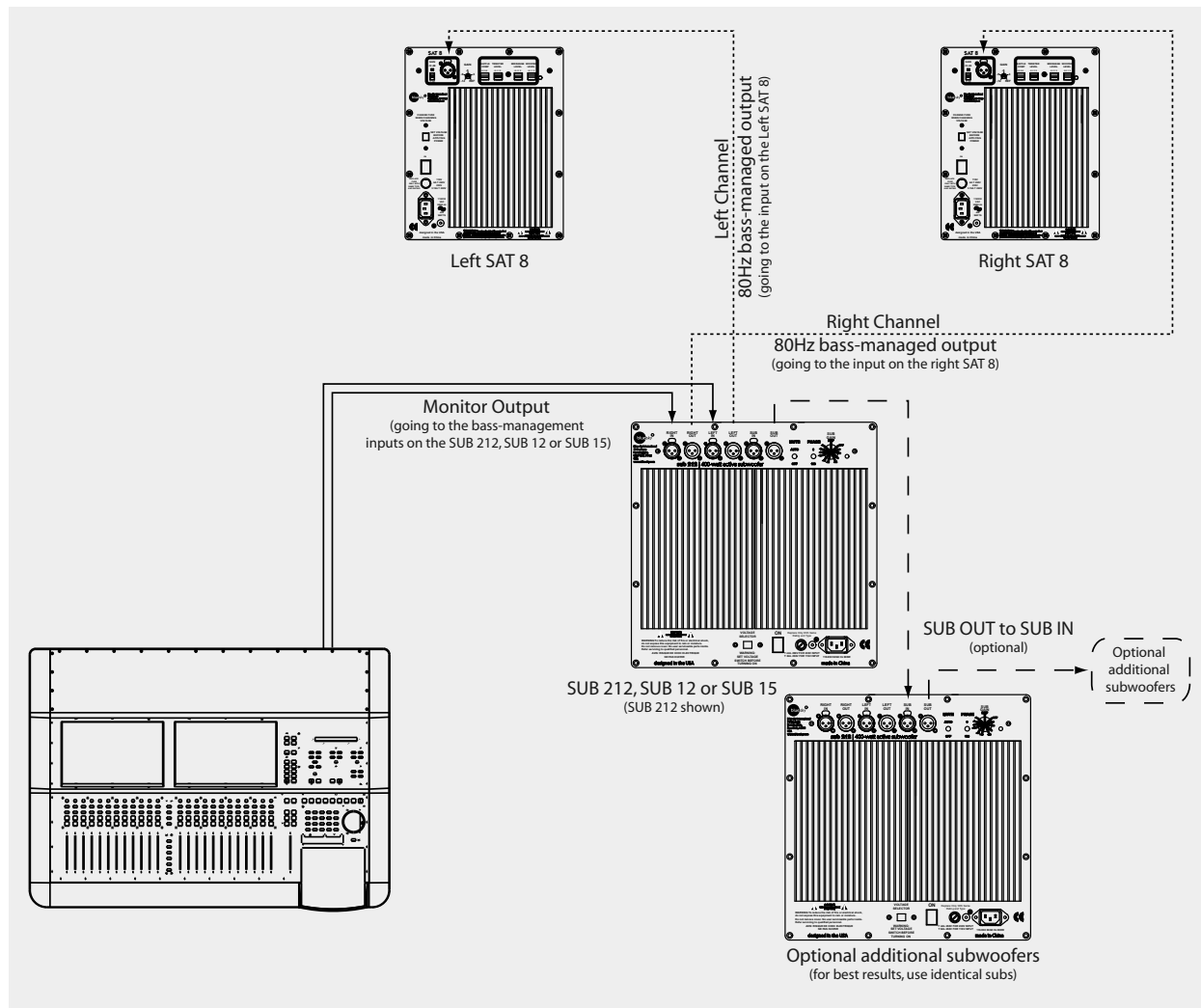
5) Recommendation: The SAT 8 includes four primary baffle compensation settings, each of which reduces the MF to LF "bump" that typically results from mounting a speaker in a baffle wall. The amount of compensation needed is dependent on room acoustics and the size and type of baffle wall. The only way to accurately determine the amount of compensation needed is to use a high resolution acoustic analyzer, such as MLSSA, TEF, etc. For more information please see page 6 & 7 [A Tour of the SAT 8 Amplifier & Electronics] and page 14 [Measurement Data].

Mounting the SAT 8 behind an acoustical transparent screen:

If you intend to place the SAT 8 behind an acoustically transparent screen, it is recommended that you use a screen that provides the minimum amount of acoustic loss at high frequencies, such as the Microperf screens offered by Stewart Filmscreen (www.stewartfilmscreen.com). Additionally, it is also recommended that you add some acoustically absorptive material to the wall behind the screen, to help absorb HF reflection from the screen. Typically 2" of black duct liner, or other fiberglass acoustical blanket can work well (check local building and safety codes for possible restrictions and guidelines).

SAT 8

USER MANUAL • 7 • SYSTEM SIGNAL FLOW & CONNECTIONS



2.1 SYSTEM SIGNAL FLOW & CONNECTIONS

Above is a simple diagram showing how a SAT 8 / SUB 212 system may be wired for a stereo applications. The system shows a full-range source (the console) is wired to a SUB 212 subwoofer and from there the subwoofer outputs are connected to the inputs on the SAT 8.

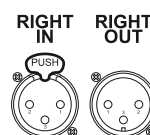
Multiple Subs:

The diagram above also shows the optional use of multiple subwoofers. Multiple subwoofers can be used to increase SPL and improve the LF response of the system, by placing the subwoofers so as to smooth out the LF response at the mix / monitoring position. Please note that we recommend that you run the subs in MONO, by using the subwoofer out on the main sub and then feeding the next sub in the chain.

We do not recommend running stereo subwoofers, because the LF response in the room will not be as consistent using this method. This is because electrical summation of the LF signals (as is done with bass-management using a mono subwoofer / LF signal), is a very predictable and repeatable way to get consistent LF response. LF phase issues between channels are resolved in the most absolute and accurate way - electrically.

Cable and connector wiring:

Use high-quality, shielded cables to connect your console, workstation or other sources to your SAT 8 / SUB 212 system. Foil-shielded cables, such as Belden 8451, 8761, or 9501 should do quite well. Other high quality cables are available and those that incorporate better shielding will yield an overall higher noise rejection, lowering your systems susceptibility to external interference. Another important tip to keep in mind when wiring your system is to route all line level cables away from the AC and other power sources, this will reduce the probability of having AC hum emanating from your monitoring system.

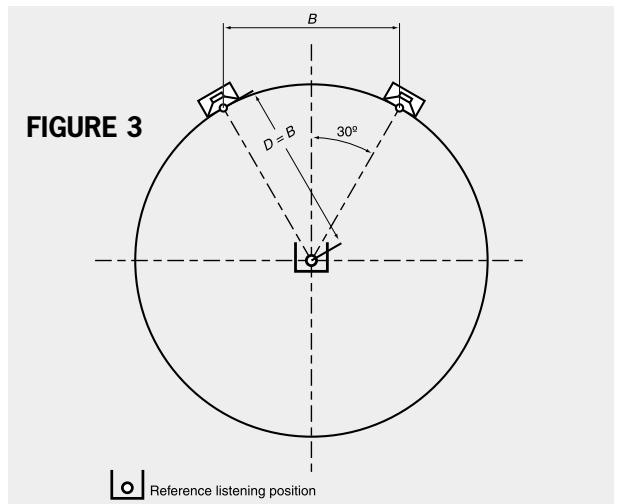


	XLR	TRS	RCA
HOT (+)	Pin 2	Tip	Tip
COLD (-)	Pin 3	Ring	
SHIELD (GROUND)	Pin 1	Shield	Shield

SAT 8

USER MANUAL • 8 • QUICK 2.1 SYSTEM SETUP INSTRUCTIONS

1. Blue Sky monitoring systems leave the factory fully calibrated. With the gain control on the SAT 8 set to the reference mark, a 200mV (-11.7dBu) pink noise signal, with a bandwidth of 500 to 2kHz, will yield 90dB SPL at 1 meter. With the gain on the SUB 12 set to the reference mark, or -9dB on the SUB 15, 100mV (-13.7dBu) pink noise signal, with a bandwidth of 40Hz to 80Hz, on one of the inputs, will yield 90dB of output at 1 meter. Because most control rooms have some gain at low frequencies a good starting point for the subwoofer level is -3dB from the reference position. If you are using multiple subs, the gain may need to be even lower than this (depends on the acoustics of the studio and the placement of the subs). For more information with regard to the controls, please see the manual that came with the SUB 12 or SUB 15, and page 6 & 7 of this manual [A Tour of the SAT 8 Amplifier & Electronics].
2. The SAT 8, SUB 212, SUB 12 and SUB 15 are compatible with balanced XLR connectors / cables. The total number of XLR cables needed will depend on the system configuration. However for a basic 2.1 system, with one sub, you need a minimum of four XLR Cables. For more information on connecting your system, please see page 9 [System Signal Flow & Connections].
3. The first step in the installation process is to position the active subwoofer. Although you have great flexibility with regard to where an active subwoofer can be placed, a good starting point is centered between the left and right satellite speakers. This could be under a console / desk, behind the console / desk, etc. If you are using multiple subwoofers, you have even more flexibility. For an expanded subwoofer placement guide, please see page 12 [Subwoofer Placement Guide].
4. Once the subwoofer is in position, connect the two input cables from the left and right analog outputs from the mixing console, digital workstation or other source, to the left and right inputs on the subwoofer. For more information on connecting your system, please see page 9 [System Signal Flow & Connections].
5. Next, place the SAT 8s into position. The recommended position for the monitors is based on an ITU standard and sets the speakers at 60 degrees from the listener, forming an equilateral triangle (a triangle with equal sides) - See Figure 3. Fortunately, this setup eliminates most of the math and is easily simplified to the following guidelines: If you want to sit 2 meters from the speakers, place the speakers 2 meters apart. If you want to sit 9 ft. from the speakers, place the speakers 9 ft. apart Etc. Ideally the SAT 8 should be at seated ear height. If this is not possible, tilting the cabinet at the listening area can improve high-frequency coverage. For more information about placement see page 8 [SAT 8 mounting and placement].
6. Once all the SATs are properly placed, connect the XLR cables from the left output on the back of the sub, to the 80Hz input on the left SAT 8. Now do the same for the right channel, connecting the right output to the right SAT 8. Lastly, please plug the power cords into the IEC connectors on the SAT 8s and the subwoofer(s). Prior to proceeding confirm that the system is wired correctly, as



8. shown on page 9 [System Signal Flow & Connections]. At this point the Blue Sky monitoring system is correctly configured, and ready for the final step in the installation. Prior to plugging the system into the wall outlet, and powering up the system, do a final quick check of all connections and level settings.
9. If everything is correct, plug the power cords into an appropriate outlet / circuit. Do not turn on the power switches, yet! Some mixers and out-board equipment such as D-to-A converters and equalizers generate loud rail-to-rail pops when they initially turn-on. Depending on the level and the gain setting of the monitoring system, these pops could damage the monitors. To avoid this, always turn on equipment in the following sequence: All sources and mixer first, and then the monitoring system. Reverse this procedure when shutting down your equipment.
10. At this point the Blue Sky monitoring system is fully operational, and ready for use. Begin by playing familiar pieces of music (preferably reference quality recordings, with dynamic and full-range sound) which can assist you in the fine-tuning and exact positioning of both the SATs and the active subwoofer. It is important to remember that the positioning of the subwoofer in the room will impact the subwoofer level. You may find it necessary to increase or decrease the level from the reference position. This is OK, and is anticipated.
11. If a more exacting setup is required, using test signals and a SPL meter, please see Page 11 [Expanded Calibration Guide].
12. Just remember - Use your ears, they are the best audio tool you have and you will be amazed how accurate the setup can be if you use familiar, high quality audio material during the setup of the system.
13. Congratulations! You have now completed the setup of one of the world's finest monitoring systems. If you have any questions, please do not hesitate to contact us directly with your questions: Call (516) 249-1399 (9:00am to 5:30pm EST), e-mail at support@abluesky.com or visit the Blue Sky Forum at www.abluesky.com/forum.

SAT 8

USER MANUAL • 9 • EXPANDED CALIBRATION GUIDE

Instructions for electroacoustic calibration of a 2.1 audio system using a SPL meter and Blue Sky's test files.

Before starting this procedure you will need to download BlueSkyTestFiles.zip (an 18 MB zip file) by going to www.abluesky.com website. To download the test file, "Right Click" and select "Save Target As". The file will begin downloading once a location has been selected.

Once downloaded, either burn the test files to a CD or import them into your DAW and follow the instructions below.

ADDITIONAL REQUIRED ITEMS

1. 2.1 Monitoring System
2. SPL Meter - such as the SPL meter sold by RadioShack in the U.S.

BlueSkyTestFiles.zip Includes 4 files:

- 1000Hz SINEWAVE -20dBFS.wav – a 1kHz file recorded at -20dBFS for electrical calibration
- 40-80Hz PINK NOISE -20dBFS.wav – a 40Hz to 80Hz bandwidth limited pink-noise file recorded at -20dBFS
- 500-2.5kHz PINK NOISE -20dBFS.wav – a 500Hz to 2.5Hz bandwidth limited pink-noise file recorded at -20dBFS
- Pink Noise full bw -20dBFS.wav – a full-bandwidth pink-noise file recorded at -20dBFS

These test files are all mono files. Please make sure you hard assign them to the left and then the right, not both channels at the same time. If you are using a CD player use only one channel of the CD player.

THEORY

The purpose of calibration is to adjust the overall electroacoustic system gain so that 0dBVU of electrical signal level equals a certain acoustic level at the listening position. Since most recording media is now digital, the reference electrical signal level is usually -20dBFS with 20dB of headroom. The reference SPL level however can vary based on the delivery media and speaker type.

Please note that the bandwidth limited signals that have been provided, limit many of the room interaction affects often associated with measuring SPL and broadband pink noise.

All test signals are recorded at -20dBFS including the 1 kHz sine wave tone. The sine wave tone is used to set the electrical output level throughout the signal path, right up to the point you get to the speakers, while the various pink noise signals are used for acoustic measurements and calibration.

The following procedure assumes you are calibrating the system to 85dBc SPL.

Step 1 TURN OFF THE MONITORING SYSTEM (until step 4)

Step 2 Remove all eq and dynamics from the signal path and set all controls to zero / unity gain. Play the 1kHz Sine Wave, hard assign it to the left channel only, and adjust the output fader so the output meter reads -20dBFS. If you are using an analog console, set the output level to 0 VU. Then hard pan the signal to the right channel output and repeat for the right channel. Once calibrated do not move the output faders.

Step 3 Mute everything and make sure the 1kHz tone is OFF .

Step 4 Now that the system has been electrically calibrated turn ON the SAT 8 / SUB 212 2.1 Monitoring System.

Step 5 Assign the 500-2.5kHz pink noise signal to the left channel only. Make sure there is nothing coming from the right channel (or any other channels). Because this signal is bandwidth limited, you don't have to worry about turning the sub off.

There are two methods of setting the levels:

A. If you have a master monitor level control (console etc), you can set the SAT 8 gain control at reference and then adjust the monitor gain control for 85 dBc. Then mark the monitor level as your reference position.

B. The other method is to set master monitor level (console etc.) to the position you want reference level to be (such as unity gain as determined by the electrical calibration process in beginning of these instructions) and then use the volume control on the SAT 8 to set 85 dBc. If you use this method you should make a note of the positing, so you can always go back to the new "reference level" if the pot gets moved.

For either method:

SPL should be measured at the mix position, with the SPL meter at arms length, with the microphone at seated ear height, angled at approximately 45 degrees, and pointed at the center point between the left and right speakers.

Once the left channel is set to 85dBc, repeat this step for the right channel

Step 6 Feed 40-80Hz pink noise signal to the left channel only. Adjust the subwoofer level control until the subwoofer reads 85dBc (slow) at the mix position. The meter will bounce around a little, so you will need to do a mental average (*I tend to filter out the peaks in my mind, so I don't set the sub too hot*). The right channel should measure about the same and no additional adjustments need to be made.

Step 7 You can play the full-bandwidth pink noise, assigning it to the left and then the right channel (not at the same time). You should measure about 85dBc. It may be a little higher, because below 30Hz the room may have a little extra gain. No adjustments should be made with Full Bandwidth pink noise, unless you have an RTA (real time analyzer) or other spectrum analyzer.

Step 8 The calibration process has now been completed. Congratulations! If you have any questions, please do not hesitate to contact us directly with your questions. (516) 249-1399 (9:00am to 5:30pm EST) or visit our website / forum @ www.abluesky.com.

SAT 8

USER MANUAL • 10 • SUBWOOFER PLACEMENT GUIDE

So now that my system uses an integral subwoofer, how do I place it in my studio for the best possible low frequency performance?

The low frequency response and efficiency of a subwoofer are heavily influenced by the acoustics of the playback environment. More specifically, the response is influenced by the room's dimensional ratios, types of construction and location of the subwoofer within that environment. You can significantly improve the subwoofer's in-room response and efficiency by experimenting with various room placements until you find an optimum location.

When placing the subwoofer there are several general guidelines that should be kept in mind. These include:

- Every acoustic space is unique and experimentation is an important key in finding the best possible location in your particular environment.
- A subwoofer becomes more acoustically efficient (has greater output) as you move it closer to a room surface (e.g. wall or floor).
- A subwoofer will give maximum output and maximum acoustic excitement when it is located in a corner.
- Under certain acoustic conditions corner locations are optimum; in others they can excite multiple "room modes", producing "muddy" or "boomy" sound.

The following methods have been found to work successfully under most conditions:

The first method described below doesn't require any special test equipment. It does require a pair of good ears and familiar broad-spectrum music material – recordings with lots of energy across a wide frequency range (from low to high). The recordings should be highly dynamic and be of relatively high quality.

The second subwoofer placement method requires using a real time analyzer – such as those made by Gold Line™ or The Audio Toolbox(TM) by TerraSonde(TM). Although many home audio enthusiasts may not have access to this equipment, if you are having a sound system or home theatre system professionally installed, this information may be useful to the installer.

Method 1

Place the subwoofer at the main listening position and connect and make sure it is properly connected to your receiver. Turn on the CD or music source and make sure that the level of the subwoofer has been raised high enough so that low frequencies are not masked by the background noise in the room. Once you have roughly balanced the level, between the sub and main speakers, move around the room and pay careful attention to where the spectral response is smoothest and has the greatest low frequency extension, pay special attention to the corners and along the walls. Also, make sure to pay attention to where the system has its' greatest impact and definition. You are not just listening for the most boom, but rather where the bass is most accurate and natural sounding. Remember, because the subwoofer is basically omni-directional, the best spot for the subwoofer can be next to, or even behind, the main monitoring area.

After finding the spot where the subwoofer has the best response

in the room, place the subwoofer in that location. Now, listen from the main position and confirm that the subwoofers response is similar to when the positions were reversed. If it is, then leave the subwoofer in that location. If not, continue to experiment with the subwoofer location until the most accurate and best response has been achieved.

Method 2

Subwoofer placement using a real time analyzer – Such as those made by Gold Line™ or The Audio Toolbox™ by TerraSonde™ etc.

Place the subwoofer at the main listening position and connect the subwoofer to your pink noise generator. Turn on your pink noise generator and make sure that the level of the subwoofer has been raised high enough so that low frequencies are not masked by the background noise in the room. Now set the analyzer to 1/12 octave resolution (or whichever setting provides the highest resolution on your particular analyzer), real time mode and begin to take measurements around the room. If the analyzer you are using has the ability to do real time averaging, then use this function to better analyze the spectral response. Please note that as you are doing measurements, it is best to keep the microphone at about 8 to 12 inches off of the ground, which is about the height of the center of the subwoofer driver.

As you walk around the room, be sure to pay careful attention to where the spectral response is smoothest and has the greatest low frequency extension, pay special attention to the corners and along the walls. Remember, because the subwoofer is basically omni-directional, the best spot for the subwoofer can be next to, or even behind, the main monitoring area.

After analyzing the data and finding the spot where the subwoofer has the best response in the room, place the subwoofer in that location. Now, take some additional measurements from the listening position and confirm that the subwoofers response is similar to when the positions were reversed. If it is, then leave the subwoofer in that location. If not, continue to experiment with the subwoofer location until the smoothest and best response has been achieved.

Additional Notes:

It has been found that a subwoofers' in-room response can sometimes be improved by facing the drivers toward a wall. Again, experimentation is the key to finding the best possible location.

Properly designed subwoofers generate tremendous energy, so they may vibrate objects close to them. If you hear buzzing or vibrating objects, make sure to try and dampen those objects. Rattling, buzzing and other sympathetic resonances can make the subwoofer localizable and therefore should be avoided. Using a sine wave generator can be helpful in locating these acoustic anomalies.

SAT 8

USER MANUAL • 11 • TECHNICAL SPECIFICATIONS & DIMENSIONS

SAT 8 Specifications

Enclosure

.75" MDF with 1" front / rear baffle and internal bracing
.25" x 20 inserts for attachment of Omnimount type 60 brackets
Multi-Aperture Acoustic Diffraction Absorbers

Dimensions (H x W x D):

20.88" (530 mm) x 11.25" (286 mm) x 13" (330 mm)*

*For complete dimensions see diagram below

Weight: 46 lbs. (20.86 kg)

1" Tweeter

Dual Ring Radiator Diaphragm with integral waveguide
High-power ferrite motor structure
Fully video shielded

4" Hemispherical Midrange

2" voice coil
Cast aluminum frame
Neodymium vented motor structure
Copper shorting ring
Aluminum alloy cone
Fully video shielded

8" Hemispherical Woofer

8" high excursion woofer with vented motor
Cast aluminum frame
2" voice coil
Mica filled polypropylene cone w/
Rubber surround
Fully video shielded

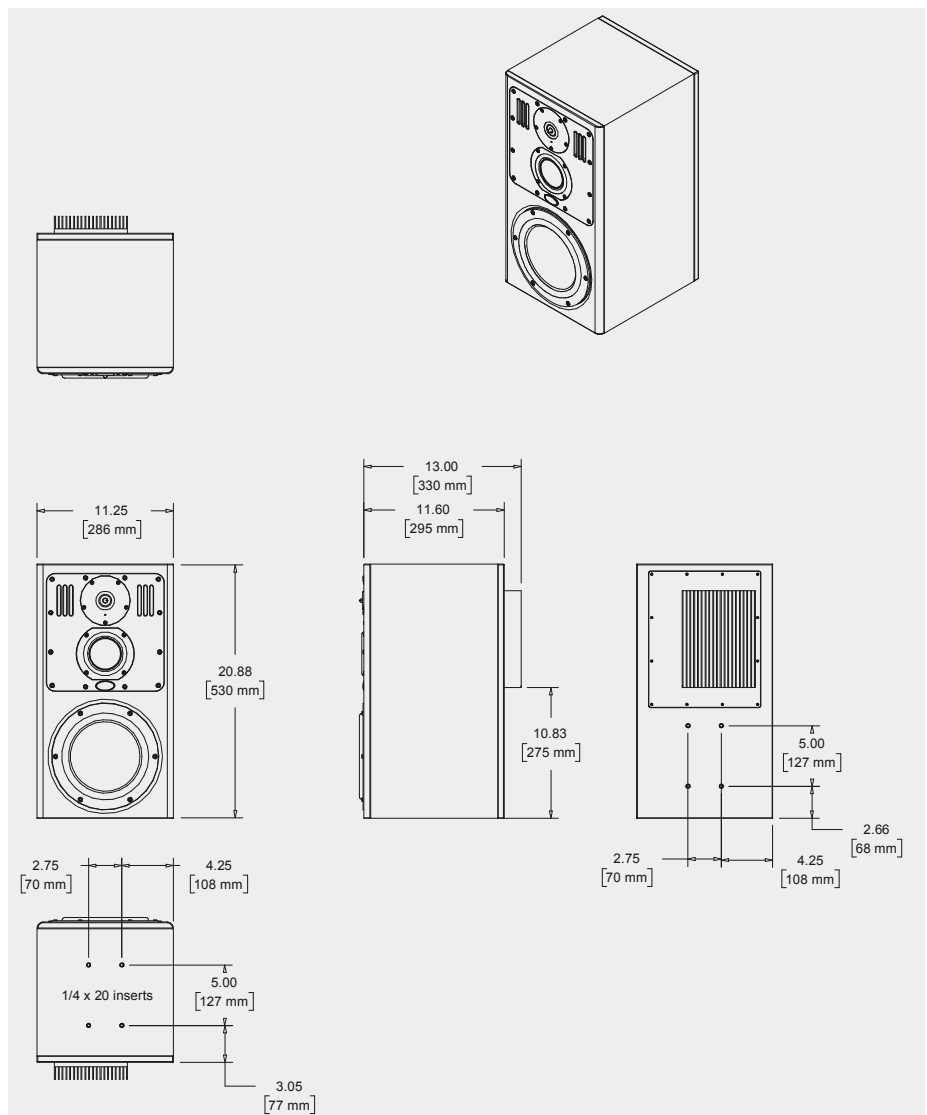
Amplifiers & Electronics

3 x 100 Watts into 4-Ohm (woofer, mid-range & tweeter)
.01% THD + noise at rated power @ 1 kHz

XLR balanced input
Fixed and Adjustable gain controls
B00® optimized crossover
"full space" & "half space" compensation controls
Individual HF, MF and LF level trims

Input impedance: 10K balanced
Common Mode Rejection 40dB typical @ 60Hz
Voltage Sensitivity (high gain) 200mv=90dB SPL @ 1 meter
Maximum Input Level: +24dBu balanced

Frequency Response: +/- 3dB 80Hz to 30kHz
+/-1.5dB 200Hz to 15kHz

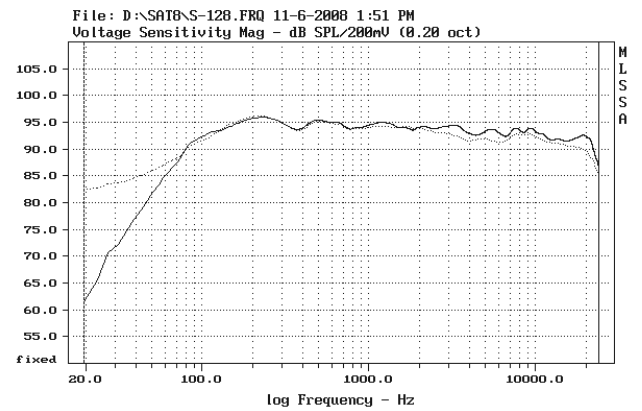


SAT 8

USER MANUAL • 12 • MEASUREMENT DATA

Conditions:

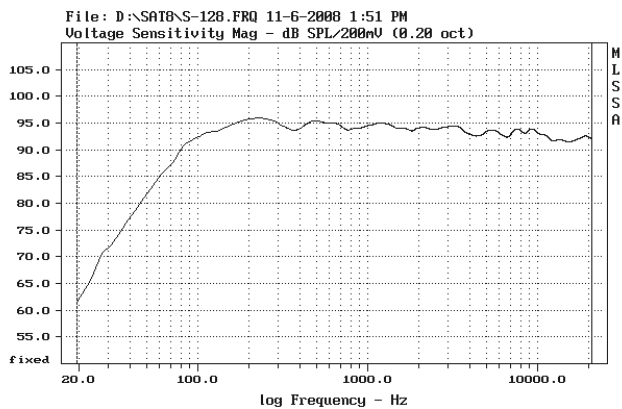
All SAT 8 measurements were made outdoors on a 58 inch stand at a distance of 1 meter. Since a 58 inch stand is not tall enough for accurate low-frequency measurements, a 1 meter ground plane measurement was also made and spliced in at 125 Hz on all measurements, to generate full frequency response.



SAT 8 ON AXIS VS LISTENING WINDOW

1-8-2009 5:47 PM

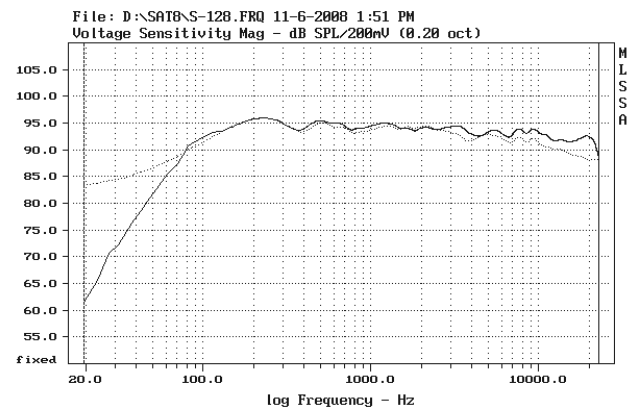
MLSSA: Frequency Domain



SAT 8 ON AXIS 1 METER

1-8-2009 5:35 PM

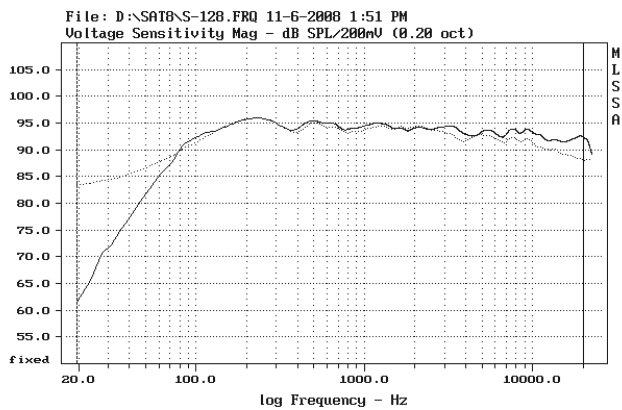
MLSSA: Frequency Domain



SAT 8 ON AXIS VS HORIZONTAL AVG 0, +/-15, +/-30 DEGS

1-8-2009 5:46 PM

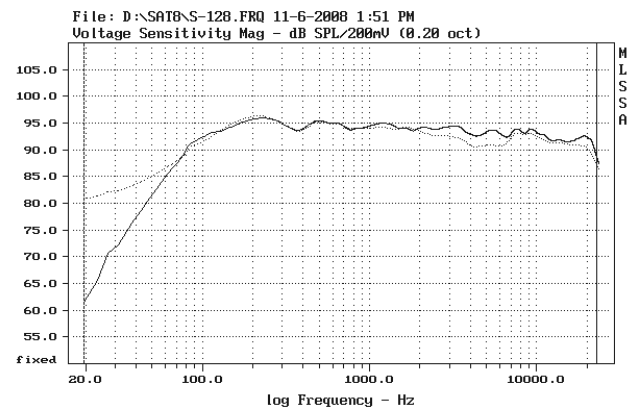
MLSSA: Frequency Domain



SAT 8 ON AXIS VS HORIZONTAL AVERAGE

1-8-2009 5:42 PM

MLSSA: Frequency Domain



SAT 8 ON AXIS VS VERTICAL AVERAGE 0, +/-15 V DEGS

1-8-2009 5:44 PM

MLSSA: Frequency Domain

SAT 8

USER MANUAL • FACTORY SERVICE INSTRUCTIONS, GENERAL CONTACT DETAILS & RECYCLING INFORMATION

13. Factory Service Instructions

Service for the U.S. versions of Blue Sky products is available only from our authorized distributor, Group One Ltd., located in Farmingdale, New York. (Service for Blue Sky products outside the United States can be obtained through local dealers or distributors.) If your monitor needs service, follow these instructions:

1. Review the manual and ensure that you have followed all setup and operating instructions.
2. Call (516) 249-1399 9:00am to 5:30pm EST and ask for Customer Service. Explain the problem and request an RA (Return Authorization) number. It is important to have your product serial number available when you call. You must have an RA number before you can obtain service.
3. Pack the product in its original packing material and box. Please do not return the manual or any mounting hardware etc. If you don't have the original packing material and/or box, please let Customer Service know when you call for the RA number. Blue Sky is not responsible for any damage that occurs due to non-factory packaging.
4. Include a legible note stating your name, shipping address (no P.O. boxes), daytime phone number, RA number, and a detailed description of the problem, including how it can be duplicated.
5. Write the RA number on the top of the carton.
6. Ship the product to the address below. We recommend United Parcel Service (UPS). Please insure the product regardless of shipping method.

Blue Sky International
ATTN: SERVICE DEPT / RA#
70 Sea Lane
Farmingdale, NY 11735
USA

7. Turnaround time is three to five business days depending on the problem. When calling for RA numbers, please ask Customer Service what the turnaround time is. The serviced product will be sent back to you via the same shipping method as received (i.e. if you ship your monitor UPS Ground it will be returned UPS Ground, UPS Red will be returned UPS Red etc...). This only applies to products serviced under the warranty.

14. General Contact Details

For sales and other enquiries, please contact Blue Sky at:

Blue Sky International
70 Sea Lane
Farmingdale, NY 11735
USA

tel: 516 249 1399
fax: 516 249 8870
email: support@abluesky.com

To discover the very latest information check out our website at:

www.abluesky.com

15. Recycling Information

Blue Sky products are designed to last many years. However, if it turns out that your Blue Sky product is damaged beyond repair, please take care that it is properly recycled in an authorized recycling facility and in accordance with all local environmental legislation.

Dismantling of Blue sky products should be done by qualified individuals only. End users should not attempt to dismantle any Blue Sky product!

Note the following aspects about recycling some of the main components of our SAT 8 studio monitor:

Packing material: Cardboard and plastic can be recycled or burned in a waste disposal oven.

Studio Monitor / Speaker Drivers: These items contain several different materials so they should be dismantled for recycling.

Electronic Components: These items can be recycled according to your local electronic equipment recycling standards. Do not burn any of the amplifier components.

Wiring, Cables and Connectors: These items can be reused in a suitable application or recycled according to your local electronic equipment recycling standards.

Cabinets: MDF cabinets can be burned in a controlled high temperature waste disposal oven.

